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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,868	01/16/2004	Tae-Jin Kang	KPP-0001	8003

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EXAMINER	
TSAI, TSUNG YIN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/758,868	KANG, TAE-JIN	
	Examiner	Art Unit	
	Tsung-Yin Tsai	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/16/2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 5-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/16/2007 and 1/16/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Acknowledge of Applicant's amendment receives 5/16/2007 and has been made of recorded.

Acknowledge of amendments to specification.

Acknowledge of amendments to claims 1,5 and 6 and cancellation of claims 2-4.

Acknowledge of amendments to claim objections.

Responses to Arguments

Applicant's argument – amended the specification as requested by Examiner.

Examiner's response – amendment noted and objection withdrawn.

Applicant's argument – address and amended objection regarding claims.

Examiner's response – amendment noted and objection withdrawn.

Applicant's argument – amended the claims rejection under 35 USC 112 as requested by Examiner.

Examiner's response – amendment noted and objection withdrawn.

Applicant's argument – In particular, neither Ramgulam nor Xu, teach or suggest, either alone or in combination, wherein the adjusting the initial position is regressed according to the correlation between the pixel shift value and the actual height value using calibration blocks, as recited in amended independent claim 1 and 6.

Thus, it is respectfully submitted that claims 1 and 6, including claims depending therefrom, i.e., claim 5, define over Ramgulam and Xu.

Examiner's response – page 221 paragraph 3. Current Approach Outline discloses where data such as height, numbers of pill and height of pills are measure and collected to establish correlation and relationships between the pilling grade, number of pills and their heights per unit of interested area, where is seen as data relating to actual height value of interest. Page 223 paragraph 5. Acquistion and Processing of data discloses where the data acquired by the laser sensor each point (x,y) is process to eliminate noise and excessive details, point (x,y) is further process by factoring in eight neighboring points for smoothing process. Examiner seen point (x,y) as the pixel of interest, the processing of noise cancellation and excessive details combine with process by factoring in eight neighboring points is seen as calculating the value of the pixel of interest's shift. Both of these data regarding height and pixel shift are consider calibration blocks. The calibration block data are seen use in page 223 paragraph 5.2 Global Thresholding where discloses correlation of that data collected in paragraph 3. Current Approach Outline, where data distribution of the fabric is obtained, where one can than choose a suitable height, or the initial position, as the threshold for scanning of the fabric. Examiner see this as where the data of the scan is collected and the result of the data, which is the calibration blaock, is use to adjust a suitable height, which is seen as the initial position, of the apparatus for measuring of the fabric pilling

Applicant's argument –Furthermore, it is respectfully submitted that use of the linear regression coefficient being 0.99 allegedly taught in Abril or any other disclosure of April does not cure the deficiencies noted above with respect to Ramgulam.

Examiner's response – This limitation is regarding claim 5 where Hector C. Abril teaches R. B. Ramgulam regarding the linear regression coefficient bring 0.99. Abril teaches this limitation where the linear regression coefficient being 0.99 can be limited in that regression number. Page 2943 right column lines 1-33 teaches where the regression will be around the range. Abril further discloses in Table 3 that the linear regression will be around value of 0.99 following the linear regression as calculated by equation 8.

Claim Rejection – 35 USC 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102() as being unpatentable over R. B. Ramgulam (J. Text. Inst. 1993, 84 No. 2 "The Objective Assessments of Fabric Pilling – Part 1: Methology" by R. B Ramgulam, J. Amirbayat and I. Porat, see IDS).

R. B. Ramgulam disclose the following system that carries out the following method, comprising:

(1) Regarding claim 1:

laying fabric specimen on a horizontally traveling table translating the table in the right angel of projector laser beam (page 222 paragraph 4.1 discloses the projector laser beam, figure 1 discloses a picture that shows the placement of the specimen on a horizontal table and the projector laser beam on a right angel above the specimen, page 223 paragraph The X-Y Tables discloses where the table that the specimen is place on is movable and controlled by a computer);

obtaining a three-dimensional (3D) fabric surface image of the projector laser beam by a couple of charge coupled device (CCD) cameras inclined to projector laser beam (page 222 paragraph 4.1 Laser Sensor discloses that light source laser bean and the photo-sensitive detector, which is seen as the CCD, figure 2 discloses that 3D image taken from the laser projector and the photo-sensitive detector);

converting the 3D image into binary image with height-threshold algorithm, and to evaluate correlations of number, area and density of a fabric pilling[[s]] obtained from standard photographs [[]] (page 223 paragraph 5. Acquisition and processing of data discloses where the data is stored and process by the microprocessor, which is seen that the 3D image is converted to binary image in order for microprocessor to calculated on and for storage, paragraph 5 further discloses where the data were smoothed by functions that are carry out regarding height and height averaging, figure 2 discloses that evaluation correlating regarding the values such as number, area and density of fabric pilling between a 3D image data and a standard photograph);

calculating the x and y coordinates of a certain region in the fabric specimen from dimension and position on the horizontally traveling tab (page 222-223 discloses where the table is computer control and can move with precision up to 10-micrometer accuracy);

calculating a pixel shift value (page 223 paragraph 5. Acquistion and Processing of data discloses where the data acquired by the laser sensor each point (x,y) is process to eliminate noise and excessive details, point (x,y) is further process by factoring in eight neighboring points for smoothing process. Examiner seen point (x,y) as the pixel of interest, the processing of noise cancellation and excessive details combine with process by factoring in eight neighboring points is seen as calculating the value of the pixel of interest's shift) due to surface roughness (page 221 paragraph 3. Current Approach Outline discloses in step (iii) that the numbers of pills were counted. Examiner seen that determining the numbers of the pills in the surface of interest is seen as the surface roughness, where increase in pilings is increase of roughness) in the 3D laser image (page 223 paragraph 5. Acquistion and Processing of data discloses where the laser sensor collected data, figure 2 discloses the result of the data collected) and to correlate between the pixel shift value (point (x,y) processing with noise and detail with eight neighbouring points is seen as pixel shift value determination) and an actual height values (page 221 paragraph 3. Current Approach Outline discloses steps where the height of different locations are measure and in step (iv) discloses the total area's height of pills are measure as

well) through adjusting an initial position of an apparatus for measuring fabric (page 221 paragraph 3. Current Approach Outline discloses computerized steps taken to measure and collection of data regarding height, segmentation of pilling and background base on a suitable algorithm, where the numbers of pills are counted, where the whole area is measure base on height of pills measure, thus in this way relationship and correlation are establish between the pilling grade, number of pills and height and total size per unit area. Page 223 paragraph 5.2 Global Thresholding discloses correlation of that data collected in paragraph 3. Current Approach Outline, where data distribution of the fabric is obtained, where one can than choose a suitable height as the threshold for scanning of the fabric. Examiner see this as where the data of the scan is collected and the result of the data is use to adjust a suitable height, which is seen as the initial position, of the apparatus for measuring of the fabric pilling); and

calculating the actual height value from the pixel shift value (page 223 paragraph 5. Acquisition and Processing of Data discloses the calculation of H=f(x,y), or the height, by the microprocessor, where the action is further carry out by factoring consideration such as noise and excessive details in the image that can cause image shifts);

wherein the adjusting the initial position is regressed according to the correlation between the pixel shift value and the actual height value using calibration blocks (page 223 discloses where the position of scanning the segmenting image of specimen of interest is base on histogram approach, which

is seen regarding pixel shift values, local image method threshold, which is seen as regarding height thresholds, the region growing method and so on).

3. Claim 6 is rejected under 35 U.S.C. 102(b) as being unpatentable over B. Xu (J. Text. Inst. 1997, 88 Part 1, No.4 "Instrumental Evaluation of Fabric Pilling", see IDS).

(1) Regarding claim 6:

a horizontally traveling table for translating a fixed fabric specimen (page 489 paragraph "2. Image-Analysis System" discloses the table that the specimen is fix upon where there will no be human interference, figure 1 discloses the structure of this movable table);

a slit laser beam projector mounted in the right angle of the table to measure a height of the fabric specimen (figure 1 discloses this structure of the table and the right angle where the slit laser beam projector is mounted, page 489 lines 5-9);

a couple of charge couple device (CCD) cameras inclined to a slit laser beam of the slit laser beam projector to capture a three-dimensional (3D) image of a surface profile of the fabric specimen (figure 1 discloses this structure, page 488 paragraph 1. Introduction lines 20-27 discloses the hardware structure of the apparatus, page 489 discloses CCDs that capture up to three different colors of the specimen and the apparatus that captures the multi-frame image for determining such values as size and appearance of specimen and pillings); and

a personal computer for fabric pilling grade based on the information of the traveling table translation and the 3D image of the surface profile (page 489 discloses where the image –analysis system is consistent with current visual standards and where the fabric pilling grade is base on the traveling table so that the image will be consistent with no human interference and apparatus that captures the multi-frame image for determining such values as size and appearance of specimen and pillings);

wherein an initial position of the apparatus is regressed according to a correlation between the pixel shift value of the 3D image and the actual height value using calibration blocks (page 489 discloses where the position of the table and the image that is capture is base on the computer taking the opportunity to conduct certain image processing and measurements task between stage movements, which is further explain that this will perfectly satisfies the need for positioning the fabric sample, where the multi-frame image for determining such values as size and appearance of specimen and pillings).

Claim Rejection – 35 USC 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over R. B. Ramgulam (J. Text. Inst. 1993, 84 No. 2 "The Objective Assessments of Fabric Pilling – Part 1: Methology" by R. B Ramgulam, J. Amirbayat and I. Porat) in view of Hector C. Abril (Optical Engineering, Vol.37 No. 1k1, November 1998 "Automatic method based on image analysis for pilling evaluation in Fabrics" by Hector C. Abril, Yezld Torres, Rafael Navarro.)

(1) Regarding claim 5:

Ramgulam teach all the subject matter above.

Ramgulam does not teach regarding wherein a linear regression coefficient according to the adjusting the initial position is 0.99.

However, Hector C. Abril in the same field of endeavor discloses that the linear regression coefficient is 0.99. (page 2943 right column lines 1-33, figure 7-9, table 3).

It would have been obvious to one skill in the art at the time of the invention to employ the teachings of Hector C. Abril to R. B. Ramgulam of having linear regression coefficient is 0.99. This limitation is follow because it conform to the standards that is comparable what is has done is the past, which is human visualization comparison.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Alkemper el at (US 2002/0081015 A1) disclose about 3D material analysis.

Vachtsevanos et al (US Patent Number 5,936,665) disclose about automated apparatus for counting pillings in textile fabrics.

Tae Jin Kang ("Automatic Evaluation of Fabric Pilling Using a 3-D Non-contact Scanning System" Soo Chang Kim; Tae Jin Kang; Instrumentation and Measurement Technology Conference, 2005. IMTC 2005. Proceedings of the IEEE Volume 1, 16-19 May 2005 Page(s):628 - 632) disclose automatic evaluation of fabric pilling using a 3-D Non-contact Scanning System.

Fazekas, Z ("Automatic visual assessment of fabric quality" Fazekas, Z.; Komuves, J.; Renyi, I.; Surjan, L.;Industrial Electronics, 1999. ISIE '99. Proceedings of the IEEE International Symposium on. Volume 1, 12-16 July 1999 Page(s): 178 - 182 vol.1 Digital Object Identifier 10.1109/ISIE.1999.801780) disclose automatic visual assessment of fabric quality.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsung-Yin Tsai whose telephone number is (571) 270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tsung-Yin Tsai
June 11, 2007

JINGGE WU
SUPERVISORY PATENT EXAMINER

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SUPERVISORY PATENT EXAMINER